



Cockle Bay Park Redevelopment

Appendix AA Arboricultural Impact Assessment

State Significant Development,
Development Application (SSD DA)

Prepared for DPT Operator Pty Ltd and DPPT Operator Pty Ltd

1 October 2021

Revision D

DOCUMENT TRACKING

Project Name	Cockle Bay Park Redevelopment Arboricultural Impact Assessment
Project Number	21SYD/19203
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Approved by	Beth Medway
Status	Final
Version Number	v4
Last saved on	1 October 2021

This report should be cited as 'Eco Logical Australia 2021. *Cockle Bay Park Redevelopment Arboricultural Impact Assessment*. Prepared for DPT Operator Pty Ltd and DPPT Operator Pty Ltd.'

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Abbreviations

Abbreviation	Description
AQF	Australian Qualifications Framework
AS	Australian Standards
DAB	Diameter at Base
DBH	Diameter at Breast Height
ELA	Eco Logical Australia
m	Metre
mm	Millimetre
NDE	Non-Destructive Excavation
NO	Number
NSW	New South Wales
SP	Species
SRZ	Structural Root Zone
TPZ	Tree Protection Zone
VTA	Visual Tree Assessment

1. Background

1.1 Introduction

This Arboricultural Impact Assessment (AIA) report has been prepared to accompany a detailed State Significant Development (SSD) Development Application (DA) (Stage 2) for a commercial mixed-use development, Cockle Bay Park, which is submitted to the Minister for Planning and Public Spaces pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The development is being conducted in stages comprising the following planning applications:

- **Stage 1** – Concept Proposal setting the overall ‘vision’ for the redevelopment of the site including the building envelope and land uses, as well as development consent for the carrying out of early works including demolition of the existing buildings and structures. This stage was determined on 13 May 2019, and is proposed to be modified to align with the Stage 2 SSD DA.
- **Stage 2** – detailed design, construction, and operation of Cockle Bay Park pursuant to the Concept Proposal.

1.2 The site

The site is located at 241-249 Wheat Road, Sydney to the immediate south of Pyrmont Bridge, within the Sydney CBD, on the eastern side of the Darling Harbour precinct. The site encompasses the Cockle Bay Wharf development, parts of the Eastern Distributor and Wheat Road, Darling Park and Pyrmont Bridge.

The Darling Harbour Precinct is undergoing significant redevelopment as part of the Sydney International Convention, Exhibition and Entertainment Precinct (SICEEP). More broadly, the western edge of the Sydney CBD has been subject to significant change following the development of the Barangaroo precinct.

1.3 Purpose of the report

This report has been prepared in response to the Secretary’s Environmental Assessment Requirements (SEARS) dated 12 November 2020 for SSD-9978934. Specifically, this report has been prepared to respond to a component of the SEARS summarised in Table 1.

Table 1: SEARS requirements

Item	Description of Requirement	Section Reference
3	The EIS must include a Landscape Plan, setting out the proposed landscaping and planting strategy for the site, including proposals to increase the urban tree canopy, proposals for native vegetation communities and plant species and justification for any tree and vegetation removal .	This report only addresses the ‘justification for any tree removal’ which is outlined in section 3 and Appendices C and D of this report.

The purpose of this report is to:

- identify the trees within the site that are likely to be affected by the proposed works
- undertake a visual tree assessment of the subject trees
- assess the current overall health and condition of the subject trees
- evaluate the retention value of the subject trees
- identify trees to be removed, retained or transplanted
- determine the likely impacts on trees to be retained
- recommend tree protection measures to minimise adverse impacts.

1.4 Proposed activity

The description of the proposed activity in Table 2 is based on information available at the time of preparing this report.

Table 2: Proposed activity

Activities that can impact trees	Description of proposed activities
Clearing vegetation	Yes, all 95 trees are proposed to be removed however none of these trees have high retention value.
Pruning vegetation	No
Natural lighting restrictions	Yes, of the 95 trees proposed to be removed, six low retention value Trees 39, 40, 41, 57, 58 and 62 and one medium retention value Tree 42 will be subject to impact from the proposed land bridge resulting in restrictions of natural light and are therefore proposed to be removed.
Earthworks including regrading, excavation and trenching	Yes, all proposed earthworks for building and services including but not limited to trenching, regrading, relevelling and excavation will be positioned within the impact area outlined in Figures 8 and 9.
Compaction	Yes, storage of materials, installation of structures, stockpiling fill or materials and parking will be positioned within the impact area outlined in Figures 8 and 9.
Refuelling and chemical use (e.g., herbicides)	No
Erection of scaffolding	Yes, all scaffolding will be positioned within the impact area outlined in Figures 8 and 9.
Vehicle movements	Yes, all vehicle access will be positioned within the impact area outlined in Figures 8 and 9 and/or existing roads.
Changes to stormwater management	Yes, all stormwater infrastructures will be positioned within impact area outlined in Figures 8 and 9.
Landscaping	Yes, all landscaping will be positioned within the impact area outlined in Figures 8 and 9.

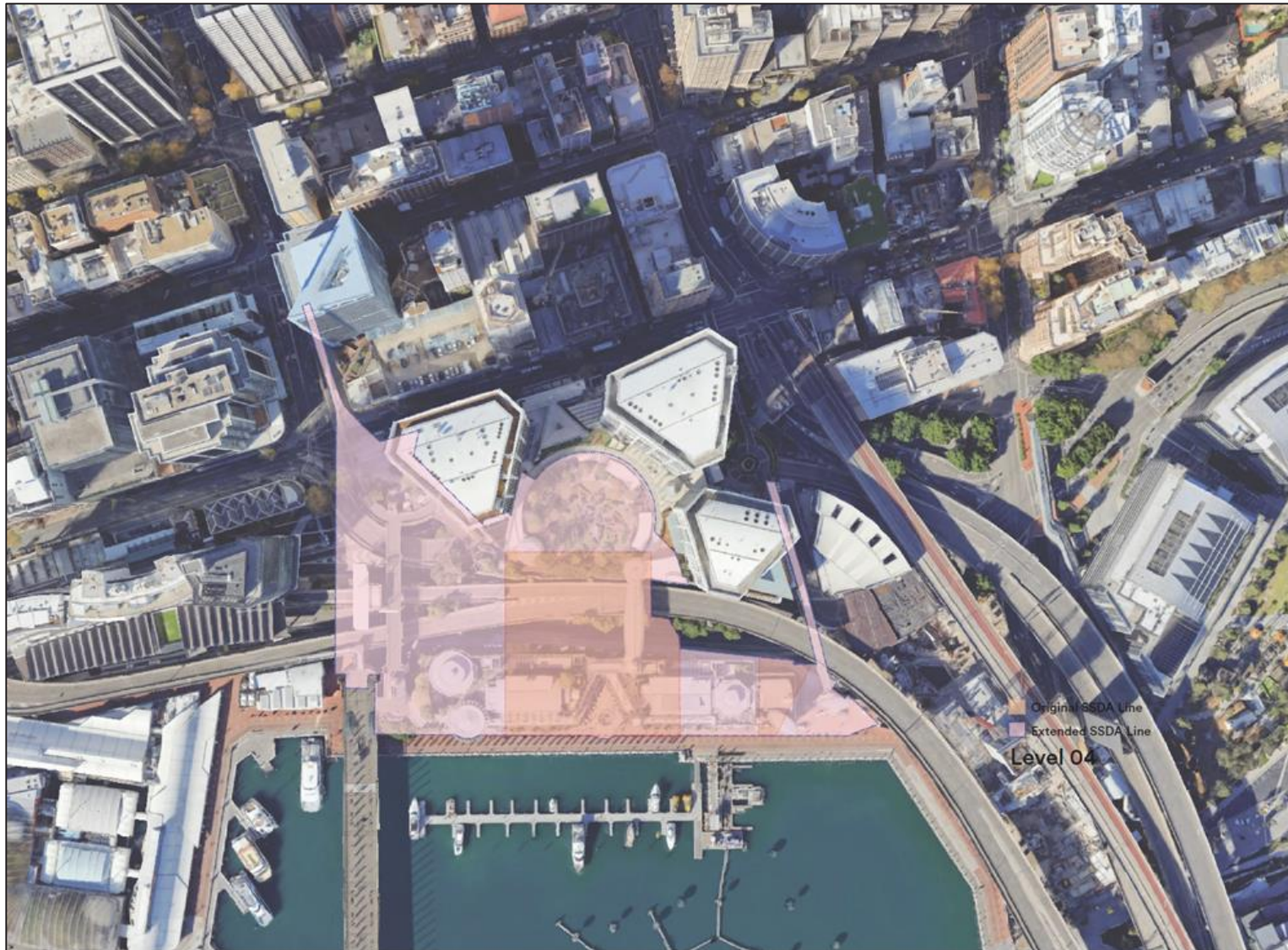


Figure 1: Site location

2. Method

2.1 Definition of a tree

A tree is defined under the Australian Standard, AS 4970-2009, *Protection of Trees on Development Sites* as a long lived woody perennial plant greater than (or usually greater than) 3 m in height with one or relatively few main stems or trunks.

The City of Sydney Council Development Control Plan (2012) states that *'a permit of development consent is required to ringbark, cut down, top, lop, prune, removed, injure or wilfully destroy a tree that:*

- (a) has a height of 5 m or more; or*
- (b) has a canopy spread of over 5 m; or*
- (c) has a trunk diameter of more than 300 mm, measured at ground level; or*
- (d) is listed in the Register of Significant Trees'*

2.2 Visual tree assessment

The health and condition of the subject trees were assessed in accordance with a stage one visual tree assessment (VTA) as formulated by Mattheck and Breloer (1994) and practices consistent with modern arboriculture.

A total of **95 trees** were inspected on Thursday 22 July 2021 and Friday 10 September 2021 by AQF Level 5 Consulting Arborist, David Bidwell.

The following limitations apply to this methodology:

- Trees were inspected from ground level, without the use of any invasive or diagnostic tools and testing.
- Trees were inspected within limits of site access as specified in Appendix D.
- The locations of the subject trees were tagged and recorded using hand-held GPS units and then moved using GIS mapping techniques to the tree location survey (LCG Solutions n.d.).
- Tree canopy was measured by stepping out the distance within the dripline.
- No aerial inspections or root mapping was undertaken.
- Tree identification was based on broad taxonomical features present and visible from ground level at the time of inspection.
- Tree height was measured using a laser clinometer.
- Diameter at breast height (DBH) and diameter at base (DAB) were measured using tape.

2.3 Retention value & landscape significance

The retention value or importance of a tree or group of trees, is determined in accordance with the Institute of Australian Consulting Arborists (IACA) Significance of a Tree Assessment Rating System (STARS®), which is summarised in Appendix A. The method considers the Safe Useful Life Expectancy (SULE) and landscape significance of a tree. Trees are provided one of the following ratings:

- High - priority for retention. These trees are considered important and should be retained and protected. Design modification or re-location of building/s should be considered to

accommodate the setbacks as prescribed by Australian Standard AS 4970–2009 Protection of trees on development sites.

- Medium - consider for retention. These trees are moderately important for retention. Their removal should only be considered if adversely affected by the proposed works and all other alternatives have been considered and exhausted.
- Low - consider for removal. These trees are not considered important for retention, nor require special works or design modification to be implemented for their retention.
- Priority for removal: These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

2.4 Protection zones

2.4.1 Tree protection zone (TPZ)

The TPZ is a specific radius area above and below ground and at a distance from the trunk set aside for the protection of a tree's roots and crown to provide for the viability and stability of a tree to be retained where it is potentially subject to damage by the development. The TPZ (as defined by AS 4970-2009) requires restriction of access during the development process. Groups of trees with overlapping TPZs may be included within a single protection area. Tree sensitive measures must be implemented if works are to proceed within the TPZ. The TPZ radius is determined by multiplying its DBH by 12.

2.4.2 Structural root zone (SRZ)

The SRZ is the area of the root system (as defined by AS 4970-2009) used for stability, mechanical support and anchorage of the tree. It is critical for the support and stability of trees. Severance of roots within the SRZ is not recommended as it may lead to the destabilisation and/or decline of the tree.

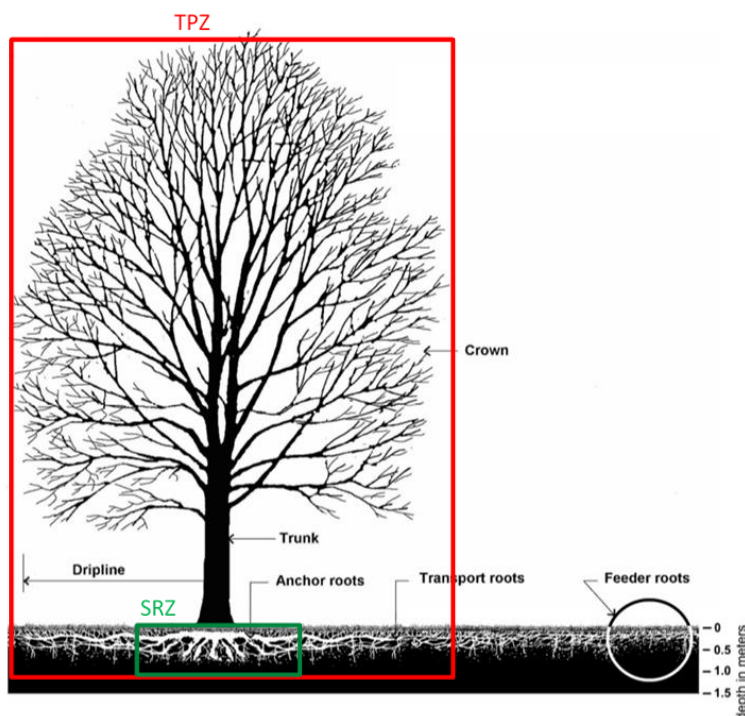


Figure 2: Representative tree structure and indicative TPZ and SRZ

2.5 Potential impacts

Trees may be impacted by physical or chemical damage to roots or above tree parts. Examples include impacts associated with site grading, soil compaction, excavation, stock piling within TPZ as well as changes in site hydrology, changes in soil level and site contamination. The extent of encroachment to the TPZ and SRZ determines the level of potential impact. AS 4970-2009 defines types of encroachment as follows and as illustrated in Appendix B:

- **Major encroachment** - If the proposed encroachment is greater than 10% of the TPZ or inside the SRZ, the project arborist must demonstrate that the tree(s) would remain viable. The location and distribution of roots may be determined through non-destructive excavation (NDE) methods such as hydro-vacuum excavation (sucker truck), Air Spade or manual extraction. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.
- **Minor encroachment** – If the proposed encroachment is less than 10% of the TPZ, and outside of the SRZ, detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.

For the purposes of this Arboricultural Impact Assessment, impacts are defined as follows:

- **High impact:** The SRZ is directly affected or the proposed encroachment is greater than 20% of the TPZ. Trees may not remain viable if they are subject to high impact (including impact from the reduction of natural light). These trees cannot be retained unless the proposal is changed.
- **Medium impact:** If the proposed encroachment is greater than 10% of the TPZ (but less than 20% of the TPZ) and outside of the SRZ, the project arborist may require detailed root investigation to demonstrate that the tree(s) would remain viable. These trees may be retained subject to further investigation and mitigation measures.
- **Low impact:** If the proposed encroachment is less than 10% (total area) of the TPZ, and outside of the SRZ, detailed root investigations should not be required. These trees can be retained.
- **No impact:** No likely or foreseeable encroachment within the TPZ. These trees can be retained.

Impacts are calculated using geographic information systems techniques.

3. Results and discussion

Results of the arboricultural assessment are summarised in Table 3. Detailed results are included in Appendices C and D. The site photos are outlined in Appendix E.

No high retention value trees were identified within the assessment site.

All 95 trees are proposed to be removed as they will be subject to high impact (>20% TPZ encroachment and/or SRZ encroachment) by the proposed redevelopment of Cockle Bay Park.

Tree planting and landscape strategy has been developed and is described in the Architectural Design Statement – section 3.6 – Open Space, Public Domain & Landscaping.

4. References

4.1 General references

- Barrell, J. 2001. 'SULE: Its use and status into the new millennium', in *Management of mature trees, Proceedings of the 4th NAAA Tree Management Seminar*, NAAA, Sydney.
- Brooker M.I.H, Kleinig D.A. 2006. *Field Guide to Eucalypts*. Volume 1, South-eastern Australia, 3rd ed Bloomings Books, Melbourne
- Draper, B. and Richards, P., 2009. *Dictionary for Managing Trees in Urban Environments*, Institute of Australian Consulting Arboriculturists (IACA), CSIRO Publishing, Collingwood, Victoria, Australia.
- Harris, R.W., Matheny, N.P., and Clark, J.R., 1999. *Arboriculture: integrated management of landscape trees, shrubs, and vines*, Prentice Hall, Upper Saddle River, New Jersey.
- Mattheck, C. and Breloer, H. 1994. 'Field Guide for Visual Tree Assessment' *Arboricultural Journal*, Vol 18 pp 1-23.
- Mattheck, C. 2007. *Updated Field Guide for Visual Tree Assessment*. Karlsruhe: Forschungszentrum Karlsruhe.
- IACA 2010. *IACA Significance of a Tree, Assessment Rating System (STARS)*, Institute of Australian Consulting Arboriculturalists, Australia, www.iaca.org.au.
- Robinson L, 2003. *Field Guide to the Native Plants of Sydney*, 3rd ed, Kangaroo Press, East Roseville NSW
- Standards Australia 2003. *Composition, Soil and Mulches, AS 4454 (2003)*, Standards Australia, Sydney.
- Standards Australia 2007. *Australian Standard: Pruning of amenity trees, AS 4373 (2007)*, Standards Australia, Sydney.
- Standards Australia 2009. *Australian Standard: Protection of trees on development sites, AS 4970 (2009)*. Standards Australia, Sydney.

4.2 Project specific references

- Architectus Sydney 2021. *Preliminary General Arrangement Plan Podium Master – Level 00, Cockle Bay Park – Podium Model*. Dwg no. CPH-HEN-DRW-A- A-DA1000 dated 11 June 2021.
- City of Sydney 2012. *Section 3 General Provisions, Sydney Development Control Plan*.
- LCG Solutions n.d. *Cockle Bay Tree Location*

Appendix A Tree retention assessment method

A1 Tree Significance Assessment Criteria - STARS©

The tree is to have a minimum of three criteria in a category to be classified in that group.

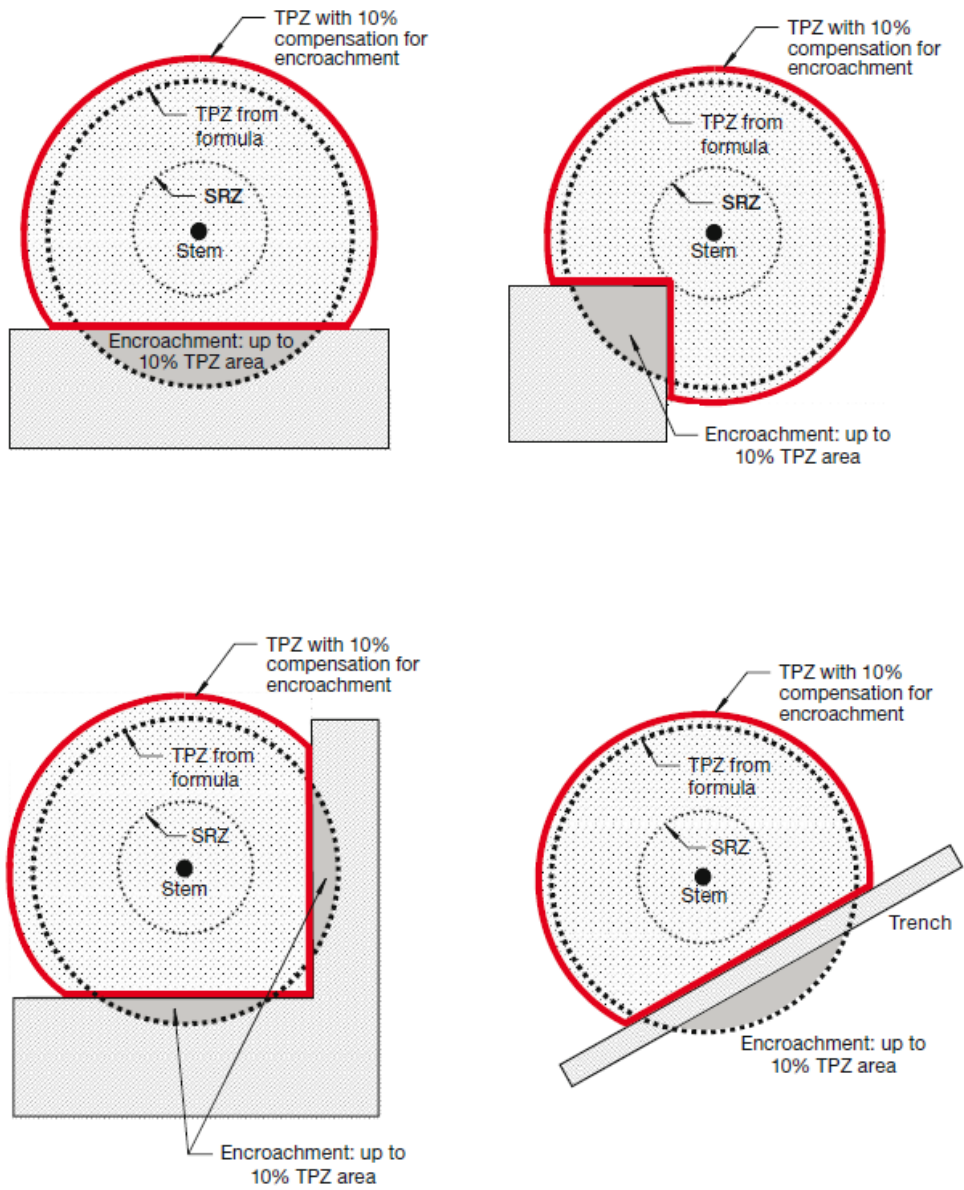
Low	Medium	High
<p>The tree is in fair-poor condition and good or low vigour.</p> <p>The tree has form atypical of the species</p> <p>The tree is not visible or is partly visible from the surrounding properties or obstructed by other vegetation or buildings</p> <p>The tree provides a minor contribution or has a negative impact on the visual character and amenity of the local area</p> <p>The tree is a young specimen which may or may not have reached dimensions to be protected by local Tree Preservation Orders or similar protection mechanisms and can easily be replaced with a suitable specimen</p> <p>The tree's growth is severely restricted by above or below ground influences, unlikely to reach dimensions typical for the taxa in situ – tree is inappropriate to the site conditions</p> <p>The tree is listed as exempt under the provisions of the local Council Tree Preservation Order or similar protection mechanisms</p> <p>The tree has a wound or defect that has the potential to become structurally unsound.</p> <p>Environmental Pest / Noxious Weed</p> <p>The tree is an environmental pest species due to its invasiveness or poisonous/allergenic properties. The tree is a declared noxious weed by legislation.</p> <p>Hazardous /Irreversible Decline</p> <p>The tree is structurally unsound and / or unstable and is considered potentially dangerous.</p> <p>The tree is dead, or is in irreversible decline, or has the potential to fail or collapse in full or part in the immediate to short term.</p>	<p>The tree is in fair to good condition and good or low vigour</p> <p>The tree has form typical or atypical of the species</p> <p>The tree is a planted locally indigenous or a common species with its taxa commonly planted in the local area</p> <p>The tree is visible from surrounding properties, although not visually prominent as partially obstructed by other vegetation or buildings when viewed from the street</p> <p>The tree provides a fair contribution to the visual character and amenity of the local area</p> <p>The tree's growth is moderately restricted by above or below ground influences, reducing its ability to reach dimensions typical for the taxa in situ</p>	<p>The tree is in good condition and good vigour</p> <p>The tree has a form typical for the species</p> <p>The tree is a remnant or is a planted locally indigenous specimen and/or is rare or uncommon in the local area or of botanical interest or of substantial age.</p> <p>The tree is listed as a heritage item, threatened species or part of an endangered ecological community or listed on Council's significant tree register</p> <p>The tree is visually prominent and visible from a considerable distance when viewed from most directions within the landscape due to its size and scale and makes a positive contribution to the local amenity.</p> <p>The tree supports social and cultural sentiments or spiritual associations, reflected by the broader population or community group or has commemorative values.</p> <p>The tree's growth is unrestricted by above and below ground influences, supporting its ability to reach dimensions typical for the taxa in situ – tree is appropriate to the site conditions.</p>

A2 Matrix assessment - STARS©

		Tree significance				
		High	Medium	Low		
		Significance in Landscape	Significance in Landscape	Significance in Landscape	Environmental Pest/Noxious Weed Species	Hazardous/ Irreversible Decline
Useful Life Expectancy	Long >40 years					
	Medium 15-40 years					
	Short <1-15 years					
	Dead					

	Priority for retention (High): Tree considered important so should be retained and protected. Design modification or re-location of structure should be considered to accommodate the setbacks as prescribed by the <i>Australian Standard AS4970 Protection of trees on development sites</i> . Tree sensitive construction measures must be implemented if works are to proceed within the Tree Protection Zone.
	Consider for retention (Medium): Tree considered less important; however, retention should remain priority. Removal considered only if adversely affecting the proposed building/works and all other alternatives have been considered and exhausted.
	Consider for removal (Low): Tree not considered important for retention, nor requiring special works or design modification to be implemented for their retention.
	Priority for removal: These trees are considered hazardous, or in irreversible decline, or weeds and should be removed irrespective of development.

Appendix B Encroachment into tree protection zones - AS 4970-2009



Appendix C Maps

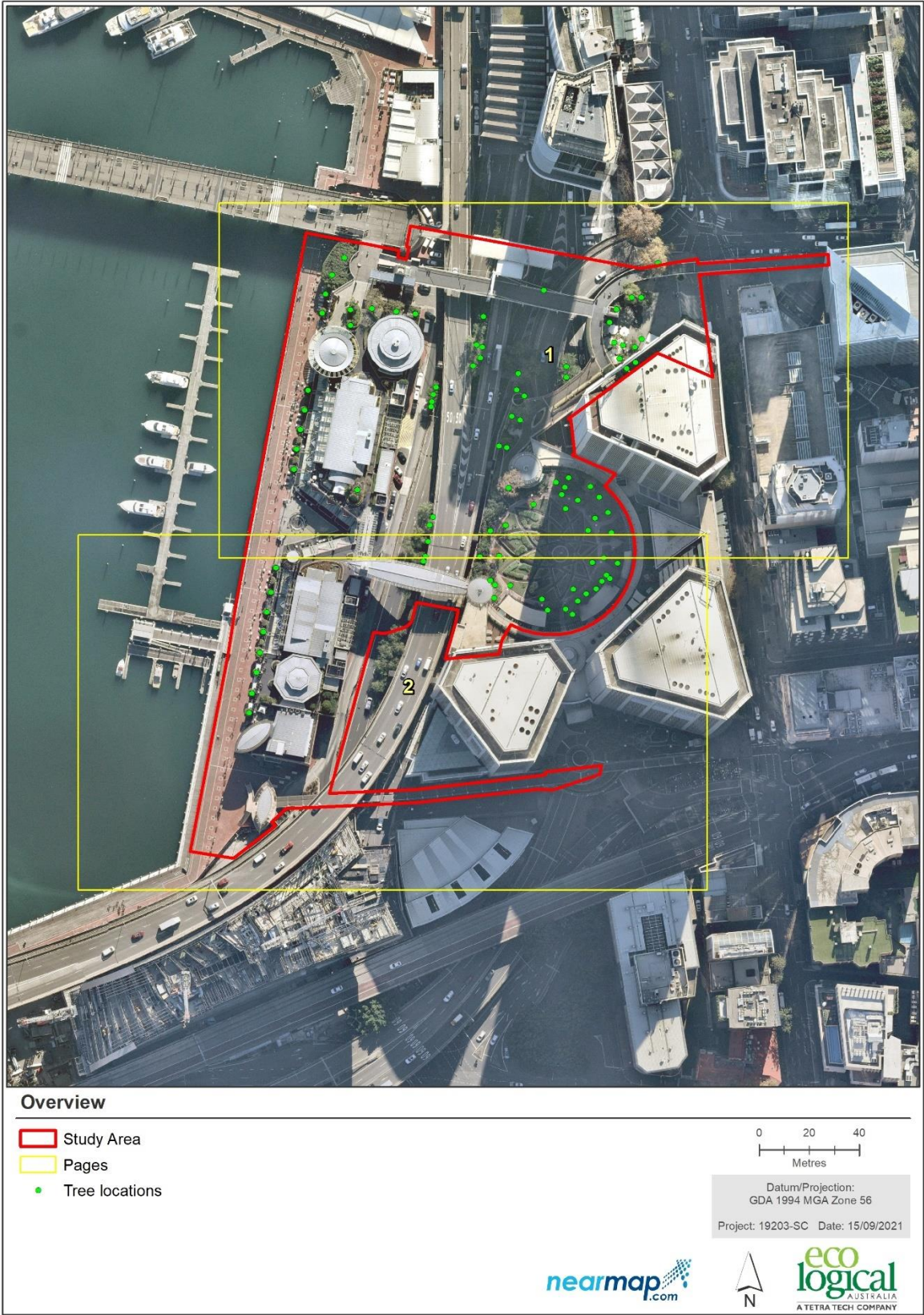


Figure 3: Overview map

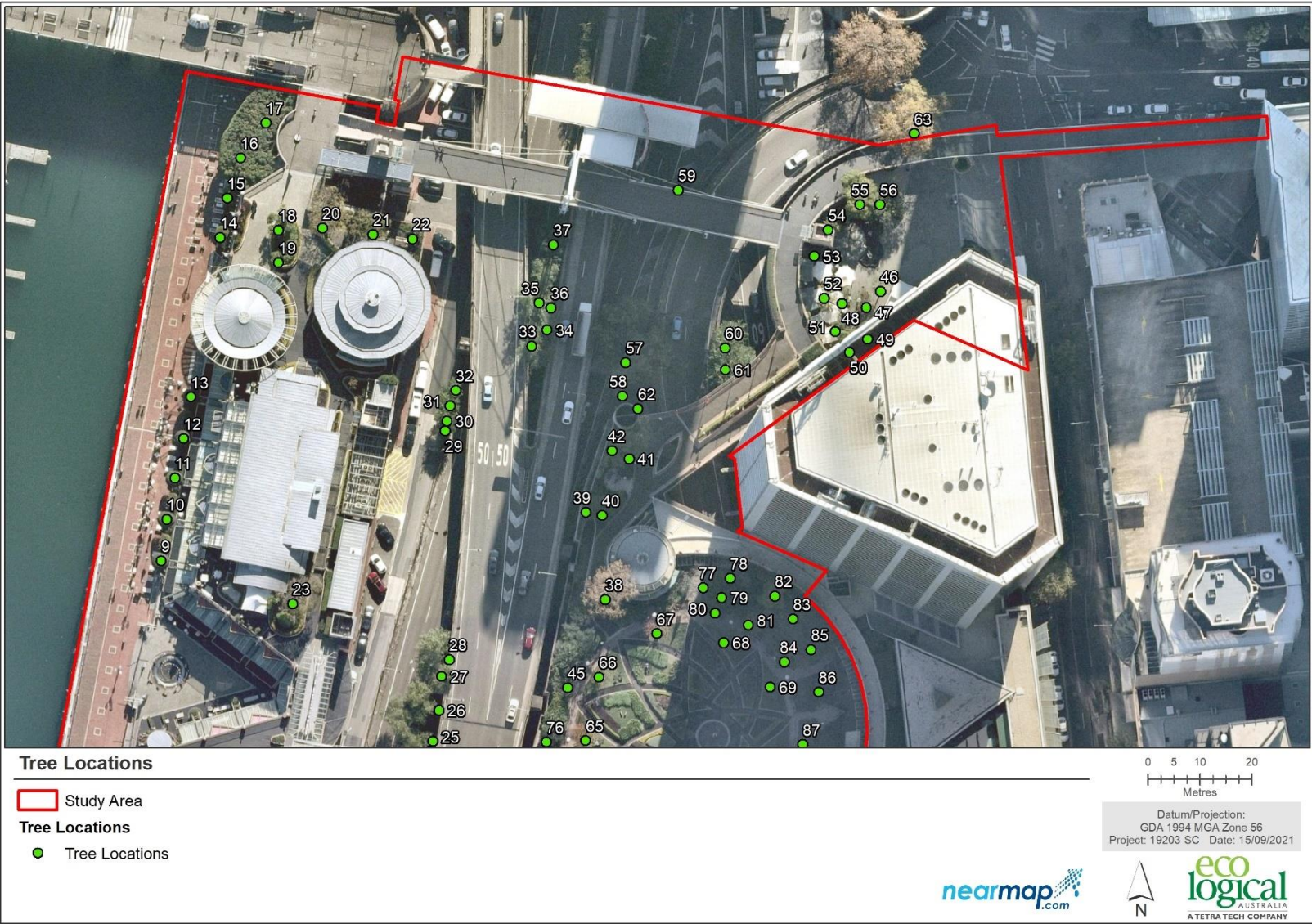


Figure 4: Tree locations, map 1

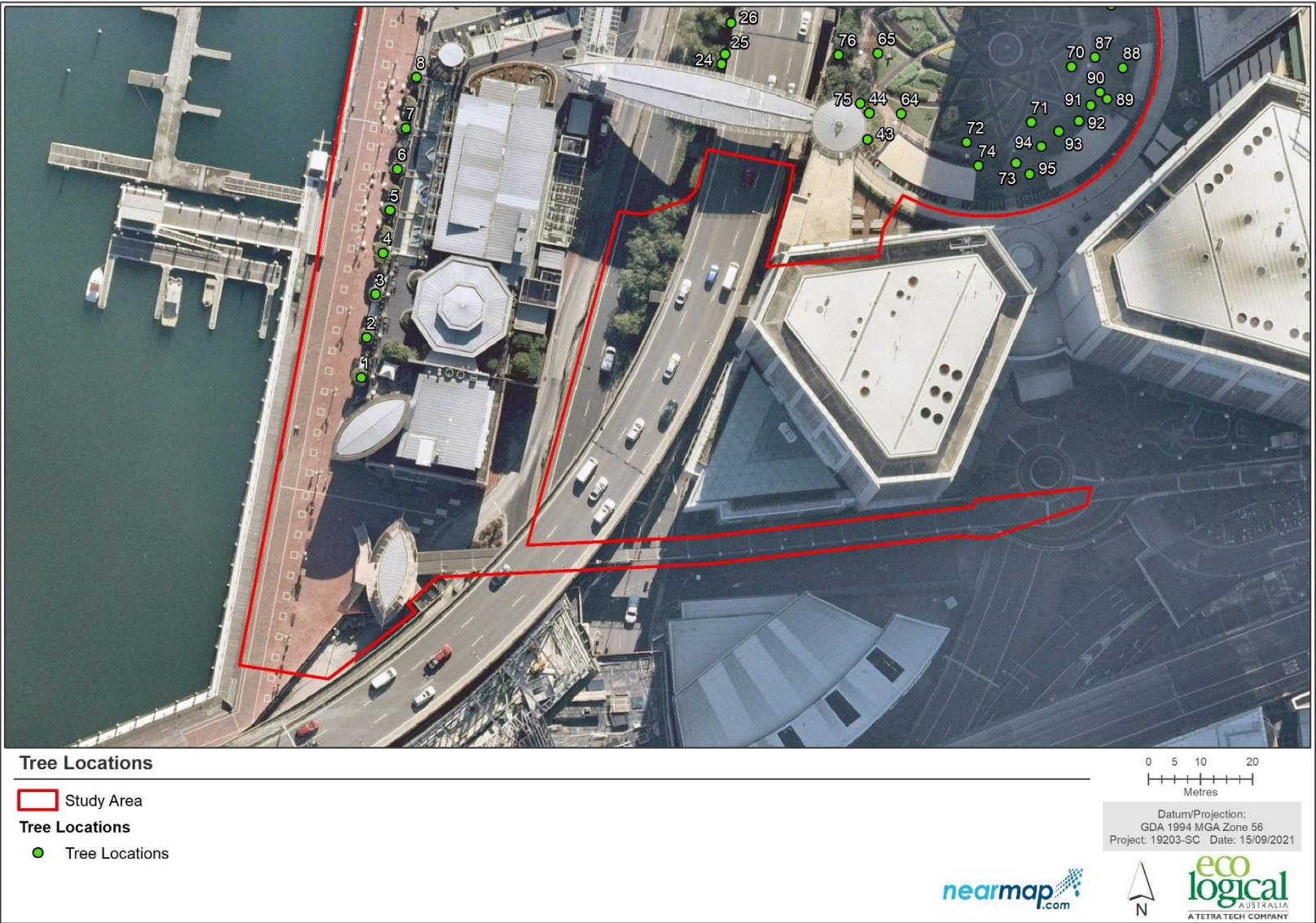


Figure 5: Tree locations, map 2

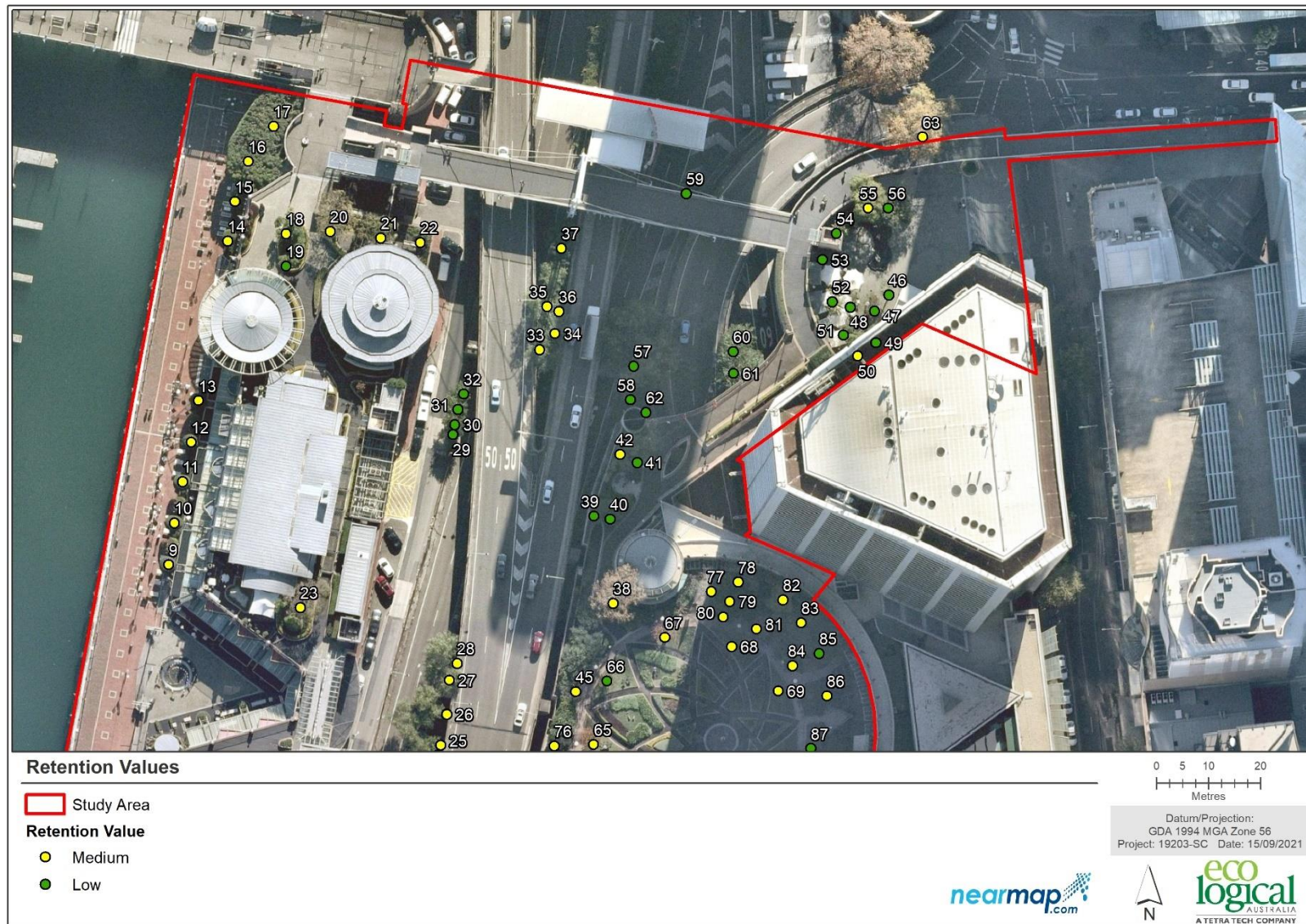


Figure 6: Retention values, map 1

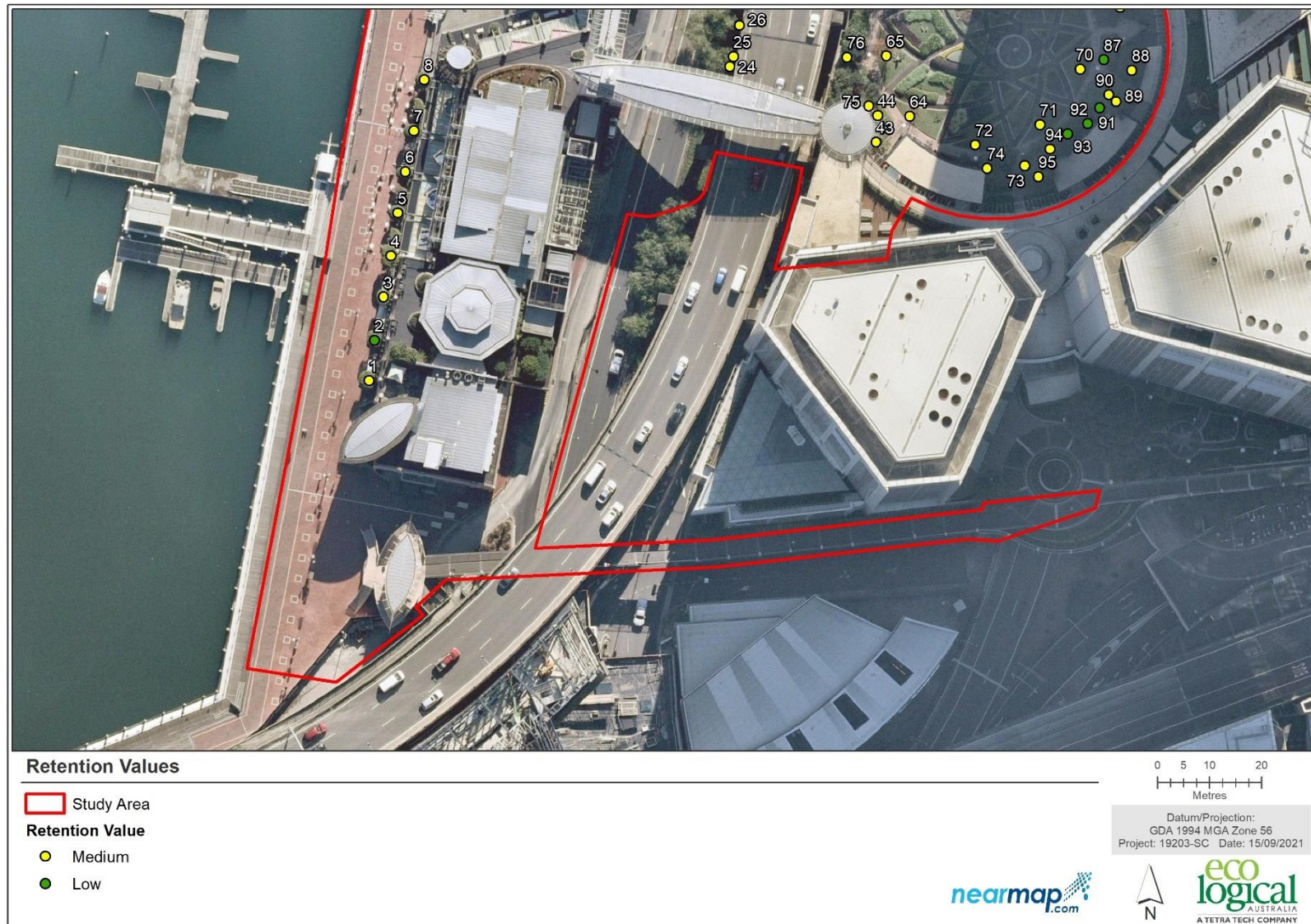


Figure 7: Retention values, map 2

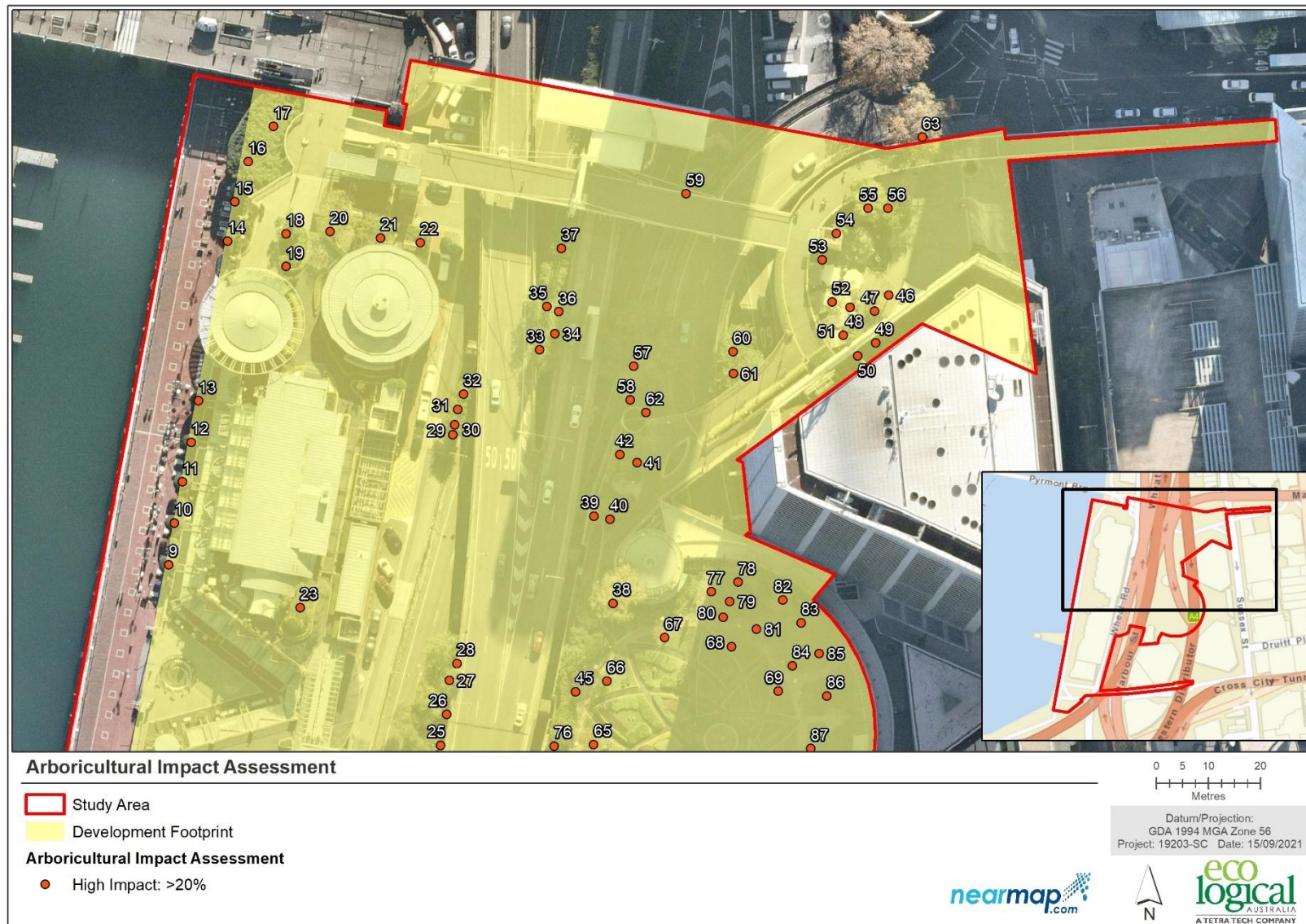


Figure 8: Arboricultural impact assessment, map 1

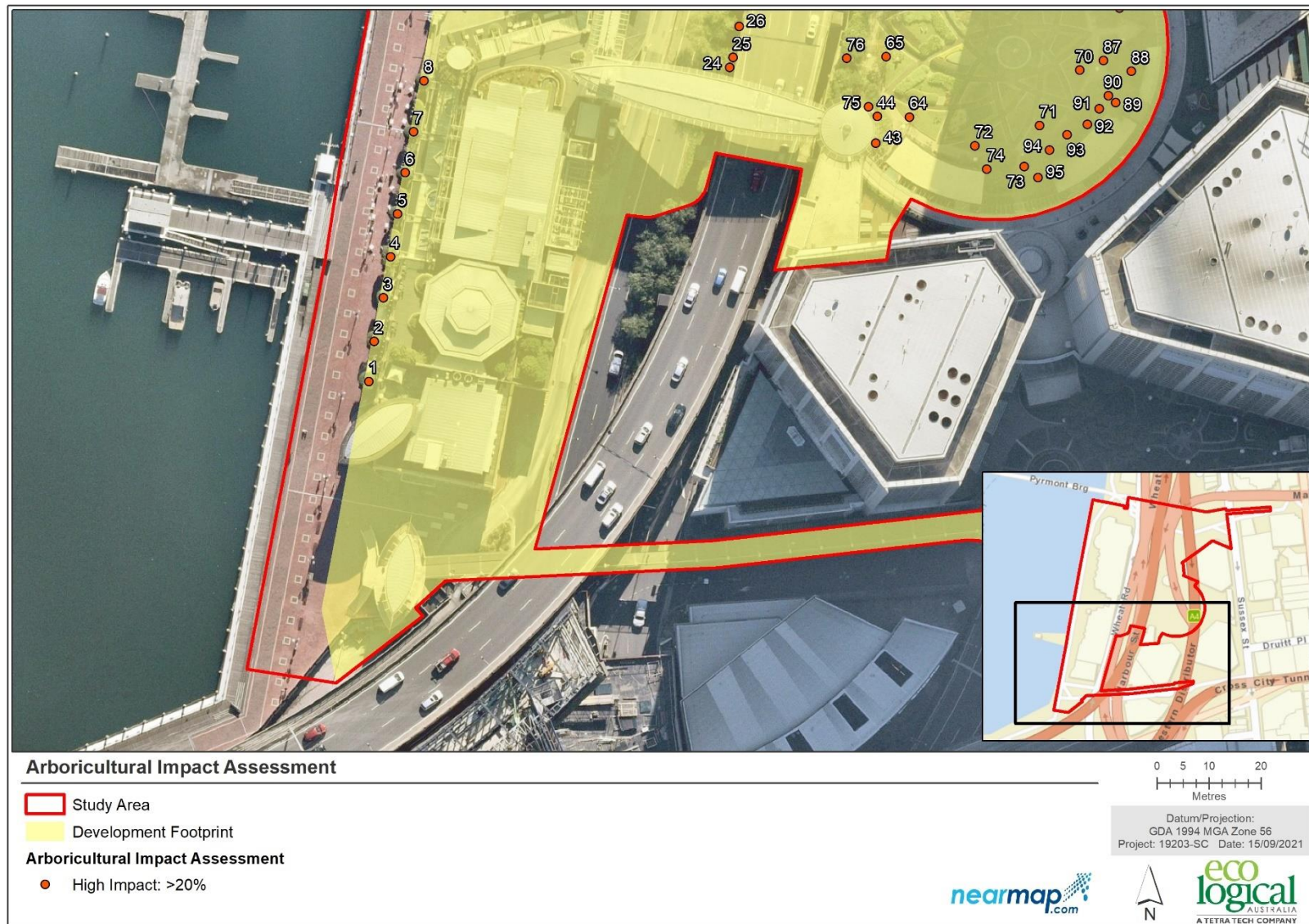


Figure 9: Arboricultural impact assessment, map 2

Appendix D Tabulated results of arboricultural assessment

Tree	Botanical name	Height (m)	Spread (m)	Health	Structure	SULE	Landscape significance	Retention value	DBH (mm)	TPZ (m)	SRZ (m)	Impact	Notes
1	<i>Waterhousea floribunda</i>	4.5	3.5	Good	Good	Short (5-15 years)	Medium	Medium	150	2.0	1.5	High Impact	Tree has been pruned (topiarised), and is in a planter box
2	<i>Waterhousea floribunda</i>	4	3	Poor	Poor	Remove (<5 years)	Low	Low	150	2.0	1.5	High Impact	Tree has been Pruned (topiarised). In planter box. Has significant crown dieback, and wounds on stem
3	<i>Waterhousea floribunda</i>	4.5	3.5	Good	Good	Short (5-15 years)	Medium	Medium	212	2.5	1.7	High Impact	Tree has been Pruned (topiarised). In planter box.
4	<i>Waterhousea floribunda</i>	4.2	4	Good	Good	Short (5-15 years)	Medium	Medium	180	2.2	1.6	High Impact	Tree has been Pruned (topiarised). In planter box
5	<i>Syzygium australe</i>	4	3.5	Good	Good	Short (5-15 years)	Medium	Medium	140	2.0	1.5	High Impact	Tree has been Pruned (topiarised). In planter box
6	<i>Syzygium australe</i>	3	2.5	Good	Good	Short (5-15 years)	Medium	Medium	150	2.0	1.5	High Impact	Tree has been Pruned (topiarised). In planter box.
7	<i>Syzygium australe</i>	3.5	2.7	Good	Good	Short (5-15 years)	Medium	Medium	160	2.0	1.5	High Impact	Tree has been Pruned (topiarised). In planter box.
8	<i>Syzygium australe</i>	3.8	3	Good	Good	Short (5-15 years)	Medium	Medium	170	2.0	1.6	High Impact	Tree has been Pruned (topiarised). In planter box.
9	<i>Syzygium australe</i>	3.5	3.5	Good	Good	Short (5-15 years)	Medium	Medium	200	2.4	1.7	High Impact	Tree has been Pruned (topiarised). In planter box.
10	<i>Syzygium australe</i>	3	2.5	Fair	Good	Short (5-15 years)	Medium	Medium	165	2.0	1.6	High Impact	Tree has been Pruned (topiarised). In planter box.
11	<i>Syzygium australe</i>	3.5	3	Good	Good	Short (5-15 years)	Medium	Medium	160	2.0	1.5	High Impact	Tree has been Pruned (topiarised). In planter box
12	<i>Syzygium australe</i>	3.8	3	Good	Good	Short (5-15 years)	Medium	Medium	160	2.0	1.5	High Impact	Tree has been Pruned (topiarised). In planter box
13	<i>Syzygium australe</i>	3.7	2.8	Good	Good	Short (5-15 years)	Medium	Medium	150	2.0	1.5	High Impact	Tree has been Pruned (topiarised). In planter box
14	<i>Waterhousea floribunda</i>	3	2.5	Fair	Fair	Short (5-15 years)	Medium	Medium	176	2.1	1.6	High Impact	Tree has been Pruned (topiarised). In planter box. Canopy thinning
15	<i>Waterhousea floribunda</i>	4.5	3	Fair	Good	Short (5-15 years)	Medium	Medium	170	2.0	1.6	High Impact	Tree has been Pruned (topiarised). In planter box
16	<i>Ficus benjamina</i>	9	11	Fair	Good	Short (5-15 years)	Medium	Medium	470	5.6	2.4	High Impact	Tree has been Pruned (topiarised). In planter box. Multiple other pruning events
17	<i>Ficus benjamina</i>	9	11	Fair	Fair	Short (5-15 years)	Medium	Medium	500	6.0	2.5	High Impact	Tree has been Pruned (topiarised). In planter box. Multiple other pruning events
18	<i>Waterhousea floribunda</i>	4.2	6	Poor	Fair	Short (5-15 years)	Medium	Medium	370	4.4	2.2	High Impact	Multiple pruning events. Dieback. In planter box
19	<i>Waterhousea floribunda</i>	3	4.5	Poor	Poor	Remove (<5 years)	Low	Low	210	2.5	1.7	High Impact	Multiple pruning events
20	<i>Ulmus parvifolia</i>	8	9	Good	Good	Medium (15-40 years)	Medium	Medium	280	3.4	1.9	High Impact	No access, not tagged. In raised bed

Tree	Botanical name	Height (m)	Spread (m)	Health	Structure	SULE	Landscape significance	Retention value	DBH (mm)	TPZ (m)	SRZ (m)	Impact	Notes
21	<i>Ulmus parvifolia</i>	5	7	Fair	Fair	Medium (15-40 years)	Medium	Medium	240	2.9	1.8	High Impact	Tree not tagged. No direct access to tree. 1 dead branch
22	<i>Ulmus parvifolia</i>	5	6	Poor	Poor	Short (5-15 years)	Medium	Medium	200	2.4	1.7	High Impact	Tree not tagged. No direct access to tree. Dieback
23	<i>Ulmus parvifolia</i>	5.5	8	Fair	Good	Medium (15-40 years)	Medium	Medium	250	3.0	1.8	High Impact	Multiple pruning events
24	<i>Schinus molle</i>	6	6	Fair	Fair	Medium (15-40 years)	Medium	Medium	400	4.8	2.3	High Impact	Tree not tagged. No direct access to tree
25	<i>Schinus molle</i>	12	12	Fair	Fair	Medium (15-40 years)	Medium	Medium	400	4.8	2.3	High Impact	Tree not tagged. No direct access to tree. Assessed from 20m distance
26	<i>Schinus molle</i>	12	9	Fair	Fair	Medium (15-40 years)	Medium	Medium	350	4.2	2.1	High Impact	Tree not tagged. No direct access to tree. Assessed from 20m distance
27	<i>Schinus molle</i>	12	6	Fair	Fair	Medium (15-40 years)	Medium	Medium	320	3.8	2.1	High Impact	Tree not tagged. No direct access to tree. Assessed from 20m distance
28	<i>Schinus molle</i>	14	9	Fair	Fair	Medium (15-40 years)	Medium	Medium	300	3.6	2.0	High Impact	Tree not tagged. No direct access to tree. Assessed from 20m distance
29	<i>Xylosma senticosum</i>	6.5	5	Fair	Fair	Short (5-15 years)	Low	Low	240	2.9	1.8	High Impact	Multiple pruning events
30	<i>Xylosma senticosum</i>	7	4	Fair	Fair	Short (5-15 years)	Low	Low	220	2.6	1.8	High Impact	Multiple pruning events
31	<i>Xylosma senticosum</i>	6.5	3	Fair	Fair	Short (5-15 years)	Low	Low	170	2.0	1.6	High Impact	Multiple pruning events
32	<i>Xylosma senticosum</i>	5.5	3	Fair	Fair	Short (5-15 years)	Low	Low	170	2.0	1.6	High Impact	Multiple pruning events
33	<i>Schinus molle</i>	12	5	Fair	Fair	Medium (15-40 years)	Medium	Medium	300	3.6	2.0	High Impact	Tree not tagged. No direct access to tree. Tree obscured from view
34	<i>Schinus molle</i>	12	5	Fair	Fair	Medium (15-40 years)	Medium	Medium	320	3.8	2.1	High Impact	Tree not tagged. No direct access to tree. View obscured
35	<i>Schinus molle</i>	12	5	Fair	Fair	Medium (15-40 years)	Medium	Medium	350	4.2	2.1	High Impact	Tree not tagged. No direct access to tree. View obscured
36	<i>Schinus molle</i>	12	5	Fair	Fair	Medium (15-40 years)	Medium	Medium	300	3.6	2.0	High Impact	Tree not tagged. No direct access to tree. View obscured
37	<i>Metrosideros excelsa</i>	10	8	Fair	Fair	Medium (15-40 years)	Medium	Medium	260	3.1	1.9	High Impact	Tree not tagged. No direct access to tree. Assessed from 15m distance
38	<i>Olea europaea</i>	3.5	6	Good	Good	Medium (15-40 years)	Medium	Medium	270	3.2	1.9	High Impact	Multiple pruning events
39	<i>Metrosideros excelsa</i>	5	3.5	Good	Good	Medium (15-40 years)	Low	Low	150	2.0	1.5	High Impact	Multi trunked
40	<i>Metrosideros excelsa</i>	5	4	Good	Fair	Medium (15-40 years)	Low	Low	150	2.0	1.5	High Impact	Multi trunked
41	<i>Schinus molle</i>	6	4	Poor	Poor	Remove (<5 years)	Low	Low	180	2.2	1.6	High Impact	Wounds on trunk, decay

Tree	Botanical name	Height (m)	Spread (m)	Health	Structure	SULE	Landscape significance	Retention value	DBH (mm)	TPZ (m)	SRZ (m)	Impact	Notes
42	<i>Schinus molle</i>	7	8	Fair	Fair	Medium (15-40 years)	Medium	Medium	380	4.6	2.2	High Impact	
43	<i>Plumeria sp.</i>	4	6	Good	Fair	Medium (15-40 years)	Medium	Medium	270	3.2	1.9	High Impact	
44	<i>Olea europaea</i>	4	5	Good	Good	Medium (15-40 years)	Medium	Medium	180	2.2	1.6	High Impact	
45	<i>Olea europaea</i>	4	5	Good	Good	Medium (15-40 years)	Medium	Medium	170	2.0	1.6	High Impact	Multi trunked
46	<i>Schinus molle</i>	5	3	Fair	Poor	Short (5-15 years)	Low	Low	170	2.0	1.6	High Impact	Wounds on trunk
47	<i>Schinus molle</i>	6	4	Poor	Poor	Remove (<5 years)	Low	Low	120	2.0	1.5	High Impact	Dead wood, wounds on trunk
48	<i>Schinus molle</i>	7	5	Poor	Poor	Remove (<5 years)	Low	Low	200	2.4	1.7	High Impact	Dead wood, wounds on trunk
49	<i>Jacaranda mimosifolia</i>	6	4	Fair	Fair	Medium (15-40 years)	Low	Low	90	2.0	1.5	High Impact	
50	<i>Jacaranda mimosifolia</i>	6	4	Good	Fair	Medium (15-40 years)	Low	Medium	140	2.0	1.5	High Impact	
51	<i>Jacaranda mimosifolia</i>	5	2	Good	Fair	Medium (15-40 years)	Low	Low	80	2.0	1.5	High Impact	Bark wounds
52	<i>Jacaranda mimosifolia</i>	6	5	Poor	Poor	Short (5-15 years)	Medium	Low	230	2.8	1.8	High Impact	Sparse canopy, bark wounds
53	<i>Magnolia 'little gem'</i>	5	2	Good	Good	Medium (15-40 years)	Low	Low	90	2.0	1.5	High Impact	
54	<i>Strelitzia nicholai</i>	5	3	Good	Good	Medium (15-40 years)	Low	Low	1000	12.0	3.3	High Impact	Multi trunked
55	<i>Jacaranda mimosifolia</i>	10	9	Fair	Fair	Medium (15-40 years)	Medium	Medium	290	3.5	2.0	High Impact	
56	<i>Schinus molle</i>	8	9	Poor	Fair	Short (5-15 years)	Medium	Low	340	4.1	2.1	High Impact	
57	<i>Celtis sinensis</i>	14	12	Fair	Fair	Remove (<5 years)	Low	Low	300	3.6	2.0	High Impact	Tree not tagged. No direct access to tree. Self-sown
58	<i>Celtis sinensis</i>	9	5	Fair	Fair	Remove (<5 years)	Low	Low	120	2.0	1.5	High Impact	Tree not tagged. No direct access to tree. Self-sown. 2 small trees
59	<i>Dead tree</i>	6	3	Poor	Poor	Remove (<5 years)	Low	Low	120	2.0	1.5	High Impact	Tree not tagged. No direct access to tree. Dead tree
60	<i>Celtis sinensis</i>	12	8	Good	Fair	Remove (<5 years)	Low	Low	300	3.6	2.0	High Impact	Tree not tagged. No direct access to tree. Self-sown
61	<i>Celtis sinensis</i>	12	8	Fair	Fair	Remove (<5 years)	Low	Low	220	2.6	1.8	High Impact	Tree not tagged. No direct access to tree. Self-sown
62	<i>Celtis sinensis</i>	10	4	Fair	Fair	Remove (<5 years)	Low	Low	120	2.0	1.5	High Impact	Tree not tagged. No direct access to tree. Self-sown

Tree	Botanical name	Height (m)	Spread (m)	Health	Structure	SULE	Landscape significance	Retention value	DBH (mm)	TPZ (m)	SRZ (m)	Impact	Notes
63	<i>Platanus X acerifolia</i>	15	13	Good	Good	Long (40+ years)	Medium	Medium	490	2.0	1.5	High Impact	Street tree, deciduous
64	<i>Lagerstroemia indica</i>	4	5	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
65	<i>Lagerstroemia indica</i>	4	4	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
66	<i>Lagerstroemia indica</i>	3.5	3.5	Fair	Fair	Medium (15-40 years)	Low	Low	120	2.0	1.5	High Impact	Pollarded
67	<i>Lagerstroemia indica</i>	4	4	Good	Good	Medium (15-40 years)	Low	Medium	180	2.2	1.6	High Impact	Pollarded
68	<i>Lagerstroemia indica</i>	3.5	5	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
69	<i>Lagerstroemia indica</i>	4	4.5	Good	Good	Medium (15-40 years)	Medium	Medium	160	2.0	1.5	High Impact	Pollarded
70	<i>Lagerstroemia indica</i>	4	3.5	Good	Good	Medium (15-40 years)	Medium	Medium	240	2.9	1.8	High Impact	Pollarded
71	<i>Lagerstroemia indica</i>	4	4	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
72	<i>Lagerstroemia indica</i>	4	3	Good	Good	Medium (15-40 years)	Medium	Medium	180	2.2	1.6	High Impact	Pollarded
73	<i>Jacaranda mimosifolia</i>	9	5.5	Good	Good	Medium (15-40 years)	Medium	Medium	180	2.2	1.6	High Impact	
74	<i>Quercus robur</i>	8	7	Good	Good	Medium (15-40 years)	Medium	Medium	180	2.2	1.6	High Impact	
75	<i>Olea europaea</i>	4	4	Good	Good	Medium (15-40 years)	Medium	Medium	250	3.0	1.8	High Impact	Lopped
76	<i>Olea europaea</i>	4	3.5	Good	Good	Medium (15-40 years)	Medium	Medium	280	3.4	1.9	High Impact	Lopped
77	<i>Nyssa sylvatica</i>	11	7	Good	Good	Medium (15-40 years)	Medium	Medium	270	3.2	1.9	High Impact	
78	<i>Gleditsia triacanthos</i>	12	6	Good	Good	Medium (15-40 years)	Medium	Medium	280	3.4	1.9	High Impact	
79	<i>Magnolia grandiflora</i>	11	13	Good	Good	Medium (15-40 years)	Medium	Medium	320	3.8	2.1	High Impact	
80	<i>Lagerstroemia indica</i>	3.5	5	Poor	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
81	<i>Lagerstroemia indica</i>	4	3.5	Good	Good	Medium (15-40 years)	Medium	Medium	220	2.6	1.8	High Impact	Pollarded
82	<i>Metasequoia glyptostroboides</i>	15	7	Good	Good	Medium (15-40 years)	Medium	Medium	300	3.6	2.0	High Impact	
83	<i>Ulmus parvifolia</i>	13	12	Good	Good	Medium (15-40 years)	Medium	Medium	320	3.8	2.1	High Impact	

Tree	Botanical name	Height (m)	Spread (m)	Health	Structure	SULE	Landscape significance	Retention value	DBH (mm)	TPZ (m)	SRZ (m)	Impact	Notes
84	<i>Lagerstroemia indica</i>	3	4.5	Good	Good	Medium (15-40 years)	Medium	Medium	250	3.0	1.8	High Impact	Pollarded
85	<i>Hymenosporum flavum</i>	5	5	Good	Good	Medium (15-40 years)	Low	Low	100	2.0	1.5	High Impact	Multi trunked
86	<i>Cupaniopsis anacardioides</i>	6	5	Good	Good	Medium (15-40 years)	Medium	Medium	180	2.2	1.6	High Impact	
87	<i>Lagerstroemia indica</i>	4	2	Good	Good	Medium (15-40 years)	Low	Low	180	2.2	1.6	High Impact	Pollarded
88	<i>Cupaniopsis anacardioides</i>	5	5	Good	Good	Medium (15-40 years)	Medium	Medium	250	3.0	1.8	High Impact	
89	<i>Caesalpinia ferrea</i>	10	7	Good	Fair	Medium (15-40 years)	Medium	Medium	240	2.9	1.8	High Impact	Bifurcated stem
90	<i>Bauhinia x blakeana</i>	8	7	Good	Fair	Medium (15-40 years)	Medium	Medium	280	3.4	1.9	High Impact	2 trees growing together
91	<i>Elaeocarpus reticulatus</i>	7	3	Good	Good	Medium (15-40 years)	Low	Low	100	2.0	1.5	High Impact	
92	<i>Hymenosporum flavum</i>	6	4	Good	Good	Medium (15-40 years)	Low	Low	100	2.0	1.5	High Impact	
93	<i>Lagerstroemia indica</i>	4	3.5	Good	Good	Medium (15-40 years)	Low	Low	240	2.9	1.8	High Impact	Pollarded
94	<i>Hymenosporum flavum</i>	10	8	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	
95	<i>Quercus robur</i>	11	9	Good	Good	Medium (15-40 years)	Medium	Medium	280	3.4	1.9	High Impact	
64	<i>Lagerstroemia indica</i>	4	5	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
65	<i>Lagerstroemia indica</i>	4	4	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
66	<i>Lagerstroemia indica</i>	3.5	3.5	Fair	Fair	Medium (15-40 years)	Low	Low	120	2.0	1.5	High Impact	Pollarded
67	<i>Lagerstroemia indica</i>	4	4	Good	Good	Medium (15-40 years)	Low	Medium	180	2.2	1.6	High Impact	Pollarded
68	<i>Lagerstroemia indica</i>	3.5	5	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
69	<i>Lagerstroemia indica</i>	4	4.5	Good	Good	Medium (15-40 years)	Medium	Medium	160	2.0	1.5	High Impact	Pollarded
70	<i>Lagerstroemia indica</i>	4	3.5	Good	Good	Medium (15-40 years)	Medium	Medium	240	2.9	1.8	High Impact	Pollarded
71	<i>Lagerstroemia indica</i>	4	4	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
72	<i>Lagerstroemia indica</i>	4	3	Good	Good	Medium (15-40 years)	Medium	Medium	180	2.2	1.6	High Impact	Pollarded

Tree	Botanical name	Height (m)	Spread (m)	Health	Structure	SULE	Landscape significance	Retention value	DBH (mm)	TPZ (m)	SRZ (m)	Impact	Notes
73	<i>Jacaranda mimosifolia</i>	9	5.5	Good	Good	Medium (15-40 years)	Medium	Medium	180	2.2	1.6	High Impact	
74	<i>Quercus robur</i>	8	7	Good	Good	Medium (15-40 years)	Medium	Medium	180	2.2	1.6	High Impact	
75	<i>Olea europaea</i>	4	4	Good	Good	Medium (15-40 years)	Medium	Medium	250	3.0	1.8	High Impact	Lopped
76	<i>Olea europaea</i>	4	3.5	Good	Good	Medium (15-40 years)	Medium	Medium	280	3.4	1.9	High Impact	Lopped
77	<i>Nyssa sylvatica</i>	11	7	Good	Good	Medium (15-40 years)	Medium	Medium	270	3.2	1.9	High Impact	
78	<i>Gleditsia triacanthos</i>	12	6	Good	Good	Medium (15-40 years)	Medium	Medium	280	3.4	1.9	High Impact	
79	<i>Magnolia grandiflora</i>	11	13	Good	Good	Medium (15-40 years)	Medium	Medium	320	3.8	2.1	High Impact	
80	<i>Lagerstroemia indica</i>	3.5	5	Poor	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	Pollarded
81	<i>Lagerstroemia indica</i>	4	3.5	Good	Good	Medium (15-40 years)	Medium	Medium	220	2.6	1.8	High Impact	Pollarded
82	<i>Metasequoia glyptostroboides</i>	15	7	Good	Good	Medium (15-40 years)	Medium	Medium	300	3.6	2.0	High Impact	
83	<i>Ulmus parvifolia</i>	13	12	Good	Good	Medium (15-40 years)	Medium	Medium	320	3.8	2.1	High Impact	
84	<i>Lagerstroemia indica</i>	3	4.5	Good	Good	Medium (15-40 years)	Medium	Medium	250	3.0	1.8	High Impact	Pollarded
85	<i>Hymenosporum flavum</i>	5	5	Good	Good	Medium (15-40 years)	Low	Low	100	2.0	1.5	High Impact	Multi trunked
86	<i>Cupaniopsis anacardioides</i>	6	5	Good	Good	Medium (15-40 years)	Medium	Medium	180	2.2	1.6	High Impact	
87	<i>Lagerstroemia indica</i>	4	2	Good	Good	Medium (15-40 years)	Low	Low	180	2.2	1.6	High Impact	Pollarded
88	<i>Cupaniopsis anacardioides</i>	5	5	Good	Good	Medium (15-40 years)	Medium	Medium	250	3.0	1.8	High Impact	
89	<i>Caesalpinia ferrea</i>	10	7	Good	Fair	Medium (15-40 years)	Medium	Medium	240	2.9	1.8	High Impact	Bifurcated stem
90	<i>Bauhinia x blakeana</i>	8	7	Good	Fair	Medium (15-40 years)	Medium	Medium	280	3.4	1.9	High Impact	2 trees growing together
91	<i>Elaeocarpus reticulatus</i>	7	3	Good	Good	Medium (15-40 years)	Low	Low	100	2.0	1.5	High Impact	
92	<i>Hymenosporum flavum</i>	6	4	Good	Good	Medium (15-40 years)	Low	Low	100	2.0	1.5	High Impact	
93	<i>Lagerstroemia indica</i>	4	3.5	Good	Good	Medium (15-40 years)	Low	Low	240	2.9	1.8	High Impact	Pollarded

Tree	Botanical name	Height (m)	Spread (m)	Health	Structure	SULE	Landscape significance	Retention value	DBH (mm)	TPZ (m)	SRZ (m)	Impact	Notes
94	<i>Hymenosporum flavum</i>	10	8	Good	Good	Medium (15-40 years)	Medium	Medium	200	2.4	1.7	High Impact	
95	<i>Quercus robur</i>	11	9	Good	Good	Medium (15-40 years)	Medium	Medium	280	3.4	1.9	High Impact	

Appendix E Site photos

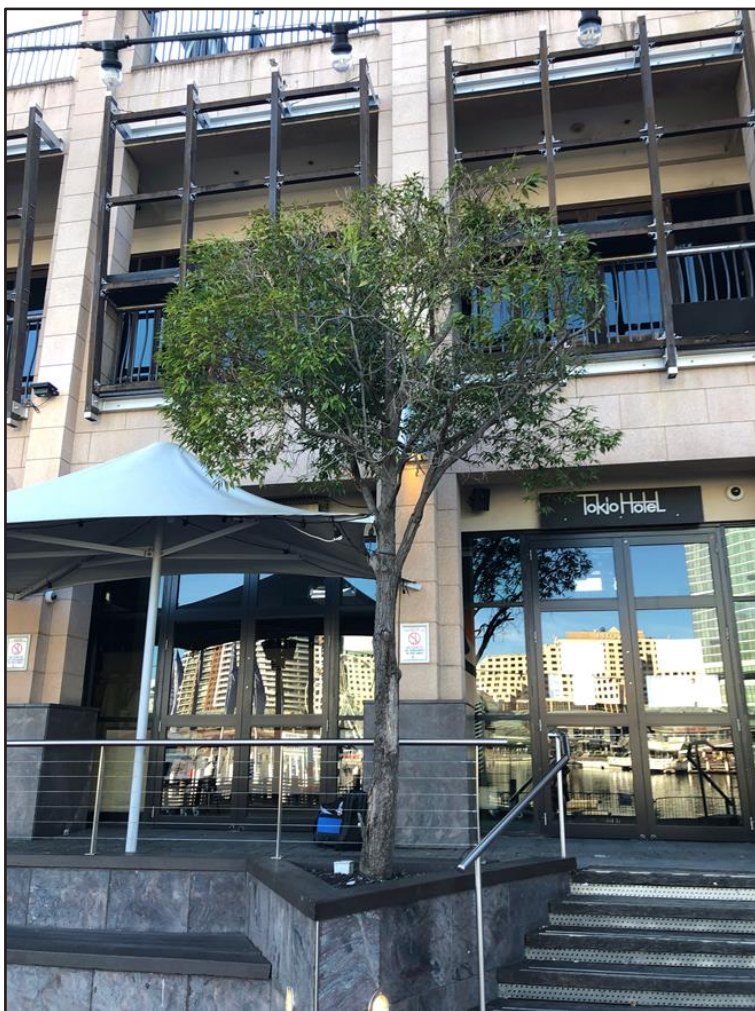


Figure 10: Tree 1



Figure 11: Tree 11



Figure 12: Tree 16



Figure 13: Tree 18



Figure 14: Tree 21

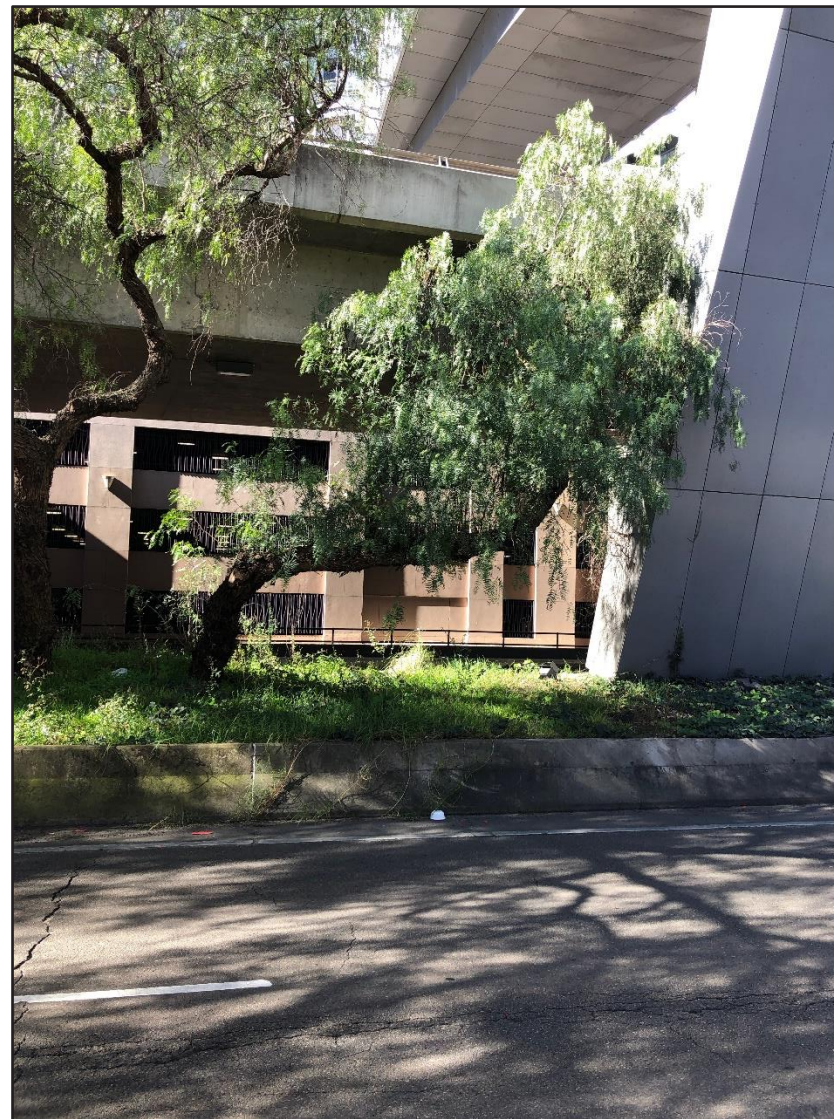


Figure 15: Tree 24



Figure 16: Tree 30

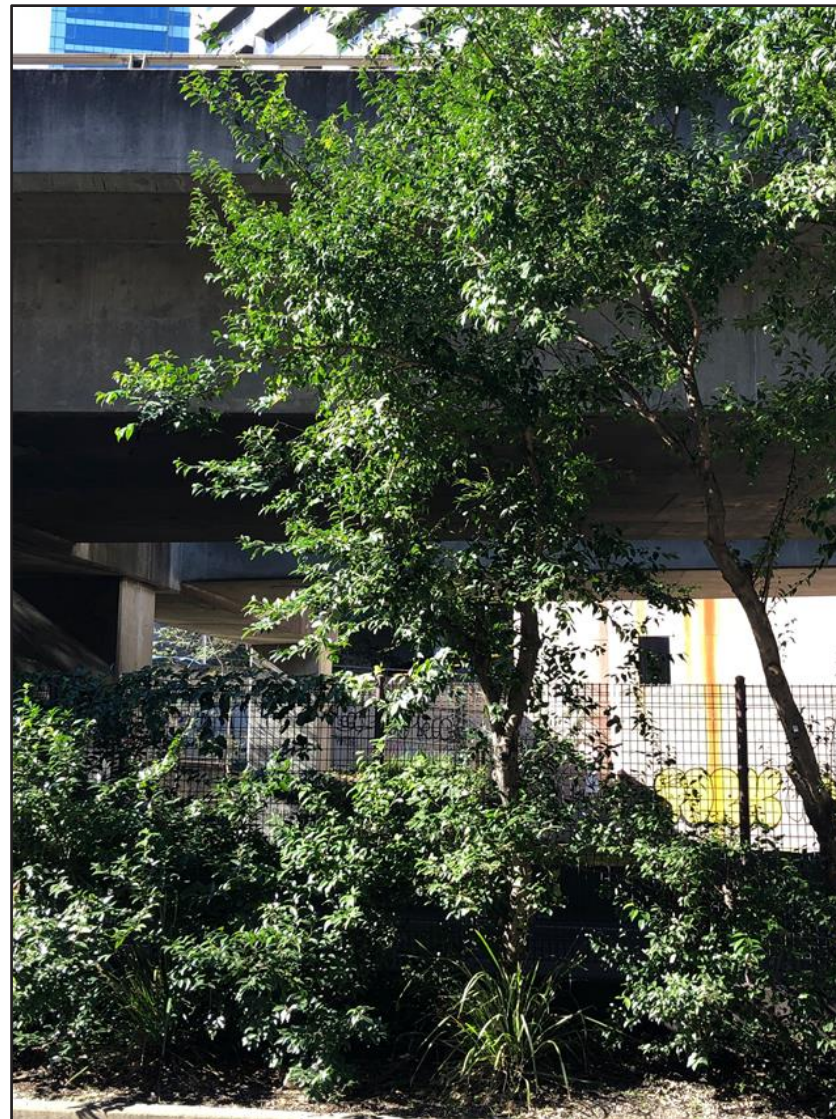


Figure 17: Tree 32



Figure 18: Tree 38



Figure 19: Tree 42



Figure 20: Tree 43



Figure 21: Tree 45



Figure 22: Tree 53



Figure 23: Tree 54



Figure 24: Tree 60



Figure 25: Tree 63



Figure 26: Tree 72



Figure 27: Tree 78



Figure 28: Tree 80



Figure 29: Tree 85



Figure 30: Tree 91



Figure 31: Tree 95

